Student Internship Placement Management System using Python

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Abstract: The Student Internship Placement Management System (SIPMS) is a web-based application designed for the training and placement department of our college. The system provides a secure and efficient platform for students to upload and manage their personal and educational information. SIPMS ensures fast and easy access to placement procedures and related activities while maintaining the confidentiality of student data. One of the key features of this project is its one-time registration enabled system, which helps to reduce repetitive tasks and streamline the entire placement process. SIPMS facilitates full IT deployment of colleges and allows for the automated insertion of data into a database. It also checks all eligibility parameters before accepting candidates, making the placement process more efficient. Overall, SIPMS provides a comprehensive solution to the challenges faced by the training and placement department of our college and can be accessed by authorized personnel throughout the organization.

Keywords: Web-Based Application, Training and Placement Department, Personal Information, Educational Information, Confidentiality, One-Time Registration, Sipms (Student Internship Placement Management System.

1. INTRODUCTION

Internship placement is an important part of higher education, as it provides students with practical experience in their chosen field and prepares them for future employment. However, managing internship placement can be a challenging task for educational institutions. The traditional manual approach to managing internship placement is time-consuming and error-prone, as it involves handling large amounts of data and communicating with multiple stakeholders.

To address these challenges, web-based internship placement management systems have been developed in recent years. These systems provide a secure and efficient platform for students to upload and manage their personal and educational information, and allow placement officers

to manage the placement process more effectively. In addition, web-based systems can reduce the administrative workload for placement officers, allowing them to focus on more strategic tasks such as building relationships with employers.

The Student Internship Placement Management System (SIPMS) is a web-based application designed to streamline and improve the internship placement process for the training and placement department of our college. SIPMS provides a comprehensive solution to the challenges faced by the department, and is intended to enhance the efficiency and effectiveness of the placement process. SIPMS ensures fast and easy access to placement procedures and related activities while maintaining the confidentiality of student data.

The purpose of this project is to design and implement SIPMS using the Python programming language and the Django web framework. Python is a popular programming language in the web development community, known for its simplicity and ease of use. The Django web framework is a high-level Python web framework that allows for rapid development of web applications. In addition, SIPMS is built on top of the MySQL database, which provides a secure and scalable storage solution for student data.

SIPMS offers a one-time registration system, automates data insertion, and checks eligibility parameters for efficient placement. It provides a comprehensive solution for the training and placement department, benefiting students and employers. Web-based systems automate administrative tasks, provide real-time updates, and offer valuable insights into the placement process. However, ensuring data security and user-friendliness are challenges. Internships have become vital for students, but the placement process can be complex and time-consuming, leading to inefficiencies and frustrations.

Web-based management systems have emerged as a potential solution to these challenges. By leveraging the power of technology, these systems can streamline and automate the internship placement process, allowing institutions to more effectively match students with suitable employers, and simplify the overall process. This is where SIPMS comes in, providing a comprehensive solution to the challenges faced by the training and placement department of our college.

The development of SIPMS began with a detailed analysis of the current process for internship placements at our college. This involved interviews with students, faculty, and employers, as well as a thorough review of existing systems and practices. From there, the team identified key pain points and opportunities for improvement, and began the process of designing and developing a custom web-based management system.

The resulting system is designed to be user-friendly and efficient, with intuitive interfaces for both students and employers. It includes features such as one-time registration, which helps to reduce repetitive tasks and streamline the entire placement process. SIPMS also facilitates full IT deployment of colleges and allows for the automated insertion of data into a database. It also checks all eligibility parameters before accepting candidates, making the placement process more efficient. Overall, SIPMS provides a comprehensive solution to the challenges faced by the training and placement department of our college, and can be accessed by authorized personnel throughout the organization.

The development of SIPMS required a multidisciplinary team with expertise in a variety of areas, including software development, database management, and user experience design. Collaboration between team members was essential to ensuring that the final product met the needs of all stakeholders, including students, employers, and administrators. Throughout the development process, the team relied on agile methodologies to ensure that the system was flexible, scalable, and able to adapt to changing requirements and feedback.

Finally, the deployment of SIPMS was accompanied by a comprehensive training program for students, employers, and administrators. This program included detailed instructions for using the system, as well as best practices for leveraging its capabilities. Ongoing support and maintenance of the system was also provided, ensuring that it remains an effective tool for managing internship placements for years to come.

1.1 Company Profile

Our college is a leading educational institution that is committed to providing quality education and training to students. The training and placement department of our college plays a critical role in ensuring that students are able to secure internships and jobs that are in line with their career goals. However, the placement process can be a tedious and time-consuming task for both students and placement officers. Therefore, there is a need for an efficient system that can automate and streamline the placement process.

1.2 Existing System and Need for System

The existing system for managing the placement process is a manual process that involves a lot of paperwork, time, and effort. The placement department at the college typically manages this process by collecting and maintaining student data manually. This includes information about the student's personal details, academic background, and any other relevant information. The manual process is not only time-consuming, but it is also prone to errors and inaccuracies. Due to the volume of data being handled, the manual process increases the chances of errors, leading to inaccuracies and delays in the placement process.

Moreover, managing the placement process manually makes it challenging to maintain confidentiality, as sensitive information can easily fall into the wrong hands. Also, it becomes difficult to track and monitor the progress of the placement process, resulting in missed opportunities for both the students and potential employers.

Therefore, there is a need for an automated system that can streamline the placement process and make it more efficient, accurate, and secure. The Student Internship Placement Management System addresses this need by automating the entire placement process, reducing manual effort and errors, and providing a more streamlined and efficient approach to managing

placements. The system provides a secure and efficient platform for students to upload and manage their personal and educational information. It also checks all eligibility parameters before accepting candidates, making the placement process more efficient.

1.2.1 Scope of Work

The Student Internship Placement Management System (SIPMS) aims to automate the entire placement process for students in a college or university. The system will provide a secure and efficient platform for students to upload and manage their personal and educational information, ensuring fast and easy access to placement procedures and related activities while maintaining the confidentiality of student data.

The primary objective of SIPMS is to provide a one-stop solution for managing the entire placement process, from registration to job offers. One of the key features of the project is its one-time registration enabled system, which will help to reduce repetitive tasks and streamline the entire placement process. The system will allow students to register once and then manage their personal and educational information throughout their academic career.

SIPMS is a web-based system accessible to students from any device with an internet connection. It features a user-friendly interface for easy navigation. The system automates eligibility checks, streamlining the placement process and saving time. It also automates the entire placement process, from job postings to offers, ensuring efficiency, accuracy, and security. The placement department has a real-time dashboard for updates and tracking student performance. Students can access job listings, monitor application status, and receive career counseling. SIPMS aims to streamline the placement process, automate tasks, and provide students with career guidance.

1.2.2 Operating Environment - Hardware and Software

The system is web-based and can be accessed using any device with an internet connection, such as a desktop computer, laptop, tablet, or smartphone. Therefore, the hardware requirements for the system are minimal, and any device with an internet connection and a web browser can be used to access the SIPMS platform.

Regarding software requirements, the following components are necessary to run the SIPMS system:

1. Python programming language: The system has been developed using the Python programming language, which needs to be installed on the server that will host the SIPMS platform.
2. Django web framework: The Django web framework has been used to develop the SIPMS system, which needs to be installed on the server along with the Python programming language.
3. HTML, CSS, and JavaScript: These technologies are used for the front-end development of the system and need to be supported by the web browser used to access the SIPMS platform.
4. MySQL: The MySQL database management system is used to store all the data related to students and placements, and it needs to be installed on the server hosting the SIPMS platform.

Overall, the operating environment for the SIPMS system is flexible and can be set up on any hardware and software configuration that meets the minimum requirements.

1.3 Detail Description of Technology Used

The system has been developed using the Python programming language, which is a high-level, object-oriented programming language that is easy to learn and has a large community of developers. Python provides a range of libraries and frameworks that make it a popular choice for developing web applications.

The Django web framework has been used to develop the SIPMS system. Django is a high-level web framework that provides a range of tools and features for rapid development, scalability, and security. It follows the Model-View-Template (MVT) architectural pattern and provides built-in support for features such as authentication, database migration, and form handling.

For the front-end development of the system, HTML, CSS, and JavaScript have been used. HTML is used to structure the content of the web pages, CSS is used for styling the web pages, and JavaScript is used for adding interactivity and dynamic behaviour to the web pages.

MySQL has been used as the database management system for SIPMS. MySQL is a popular open-source relational database management system that provides high performance, scalability, and security. It is widely used in web development and is known for its reliability and ease of use.

Overall, the technology used in developing SIPMS using Python, Django, HTML, CSS, JavaScript, and MySQL provides a robust, scalable, and secure platform for managing the training and placement process in a college.

1.4 Proposed System

SIPMS will provide an efficient platform for the training and placement department to manage the placement process. The department will be able to access the system and view all student information, including their qualifications, achievements, and interests. The department will be able to shortlist candidates based on various parameters such as academic performance, skills, and experience.

SIPMS will also provide an easy-to-use interface for recruiters to view the profiles of eligible candidates and schedule interviews. The system will ensure that only eligible candidates are shortlisted for interviews, and recruiters will be able to view detailed profiles of candidates before scheduling interviews.

SIPMS automates communication between the department, recruiters, and candidates, providing notifications for shortlisting and interview schedules. It offers end-to-end management of the placement process with analytics and customizable features. The system is scalable, easily customizable, and integrates with other platforms for data sharing. SIPMS reduces manual effort, improves placement quality, and ensures eligible candidates are shortlisted. Automated eligibility checks save time, while the system provides a centralized platform for publishing opportunities and tracking placements. A feedback mechanism allows for process improvement based on valuable insights.

In conclusion, SIPMS is a powerful tool that will revolutionize the placement process in colleges and universities. The system will automate the entire placement process, saving time and effort for the placement department, recruiters, and students. The system will also provide detailed analytics and reports, enabling the department to track the progress of placements and identify areas for improvement. The feedback mechanism will allow for continuous improvement, ensuring that the placement process is constantly evolving and improving. Overall, SIPMS is a comprehensive solution that will provide a more streamlined and efficient approach to managing placements, benefiting students, recruiters, and the institution as a whole.
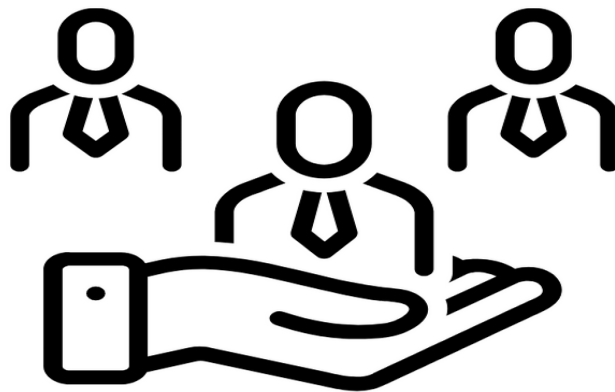
2. METHODOLOGY

2.1 System Requirements
Based on the gathered requirements, the system was designed with a user-friendly interface that allows for easy navigation and interaction with the system. The system is designed to support multiple users with different levels of access, such as students, placement coordinators, and administrators. Each user will have their own dashboard that will provide them with information related to their role and responsibilities within the system.

To ensure the system's performance and scalability, the system's hardware and software requirements were carefully considered. The system will be web-based, and thus can be accessed from any device with an internet connection. It will be developed using the Python programming language, the Django web framework, and MySQL database management system. The front-end development will use HTML, CSS, and JavaScript.

SIPMS will prioritize security, privacy, and compliance with legal requirements. It will automate the placement process, reduce errors, and streamline operations. The development will follow a project plan, agile methodology, and rigorous testing. Training, support, and user feedback will be provided for continuous improvement. Success will be measured using metrics such as efficiency, placements, and user satisfaction. The system aims to enhance efficiency, automate tasks, and ensure data protection.

2.2 System Design

Based on the system requirements, the system design was developed. The design included the development of a system architecture that would support the desired features of the new system. The system design also included the identification of software and hardware requirements, as well as the development of a user interface design.


```
1. Add student

2. Show all students

3. Filter student

4. Delete student

5. Update student details

6. Receive data to CSV file

7. Exit


Enter your choice (1-7):
```
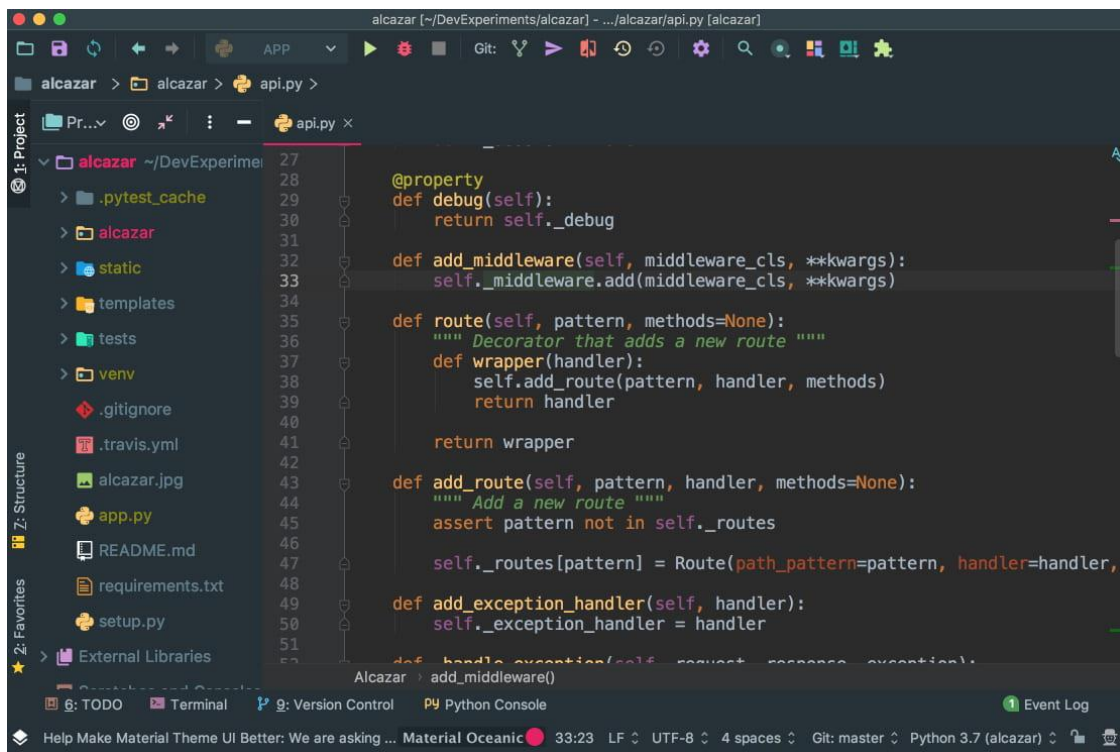
Fig. 1.1

The system architecture supports modules like student registration, profile management, placement management, and user management. It is scalable to handle increasing users and data. Hardware requirements include web and database servers, while software requirements involve programming languages, frameworks, and databases like Python, Django, HTML, CSS, JavaScript, and MySQL. The user interface design is user-friendly, with mockups and wireframes for easy navigation. The data model ensures efficient storage, retrieval, consistency, and accuracy of data.

To ensure that the system is secure, the system design included the development of a security model. The security model identified the different levels of access that users would have, as well as the security measures that would be implemented to protect the system from unauthorized access and data breaches. The system design also included the development of backup and recovery procedures to ensure that data can be restored in the event of a system failure or data loss.

2.3 Development Environment

The development environment for SIPMS included the use of the Python programming language and the Django web framework. Python was chosen for its simplicity, readability, and ease of use, while Django provided a robust and scalable web framework for developing web applications.

Fig. 2.1

In addition to Python, the Django web framework was used to develop SIPMS. Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. It is a popular framework for building scalable and maintainable web applications, and it provides a rich set of tools and libraries that make it easy to develop complex web applications quickly.

The combination of Python and Django provided a powerful development environment for SIPMS. The simplicity of Python allowed developers to focus on writing clean, readable, and efficient code, while Django provided a robust and scalable web framework that facilitated rapid development and easy maintenance. Furthermore, the Django web framework provides a wide range of built-in features such as database management, user authentication, and content administration, which helped to streamline the development process and reduce the time to market.

Python and Django were chosen for SIPMS development, enabling clean and efficient code. Django provided a robust web framework with built-in features like database management and user authentication. Tools like PyCharm and Git aided development and version control, while PostgreSQL served as the secure and scalable database solution. Libraries like Pandas, NumPy, and Matplotlib enhanced data analysis and visualization. Test-driven development ensured quality, and the development environment supported productivity and maintainability.

The development environment for SIPMS included the use of version control software, specifically Git and GitHub. Version control allowed the developers to collaborate on the project, track changes, and roll back to previous versions if needed. GitHub provided a platform

for hosting the code repository, managing issues and bugs, and facilitating communication among the developers.

2.4 System Development

The system development phase involved the actual coding and implementation of the SIPMS system. The system was developed using the Model-View-Controller (MVC) architectural pattern, which separates the application into three interconnected components: the model, which represents the data and business logic; the view, which displays the data to the user; and the controller, which handles user input and updates the model and view accordingly.
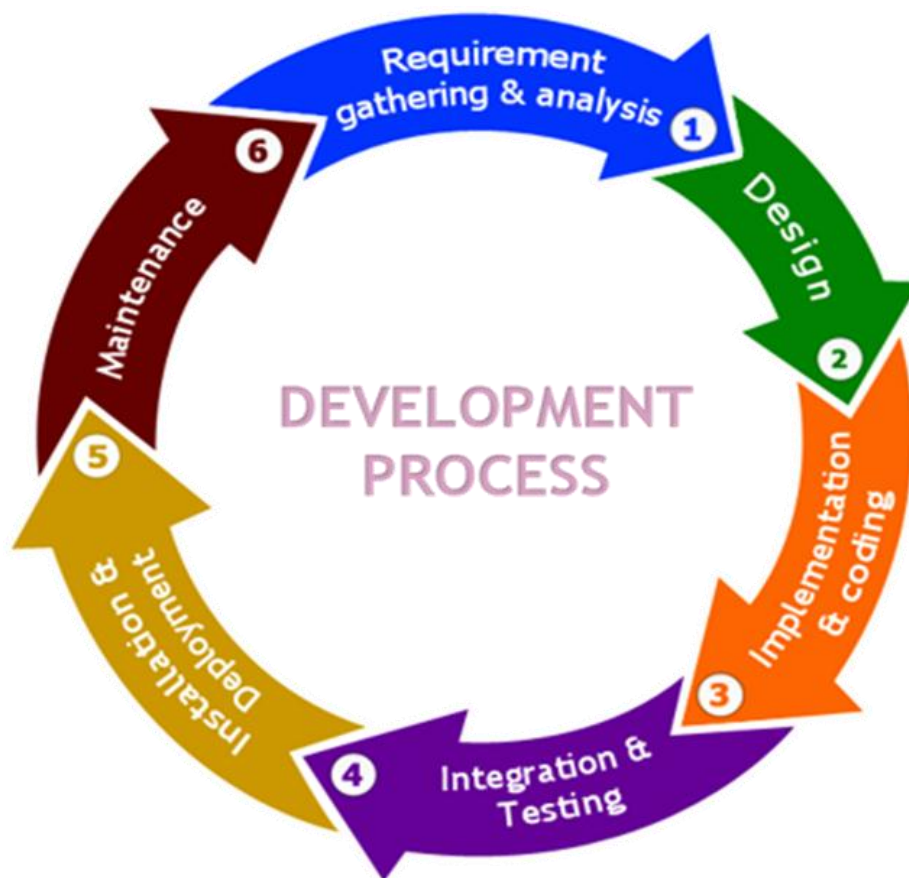
Fig. 3.1

SIPMS was developed iteratively and incrementally, following a detailed project plan and design document. Python and Django were used for the backend, with a PostgreSQL database. HTML, CSS, and JavaScript, along with Bootstrap, were used for the frontend. Testing methods included unit testing, integration testing, and user acceptance testing. Code reviews and version control using Git ensured efficient collaboration. After deployment to a web server, final testing and verification were conducted to ensure system performance and stability.

Overall, the system development phase of SIPMS was a rigorous and collaborative effort, involving the use of various programming languages, frameworks, and testing methodologies to create a robust and efficient web application for managing student internship placements.

2.5 Flowchart for the Code/Program
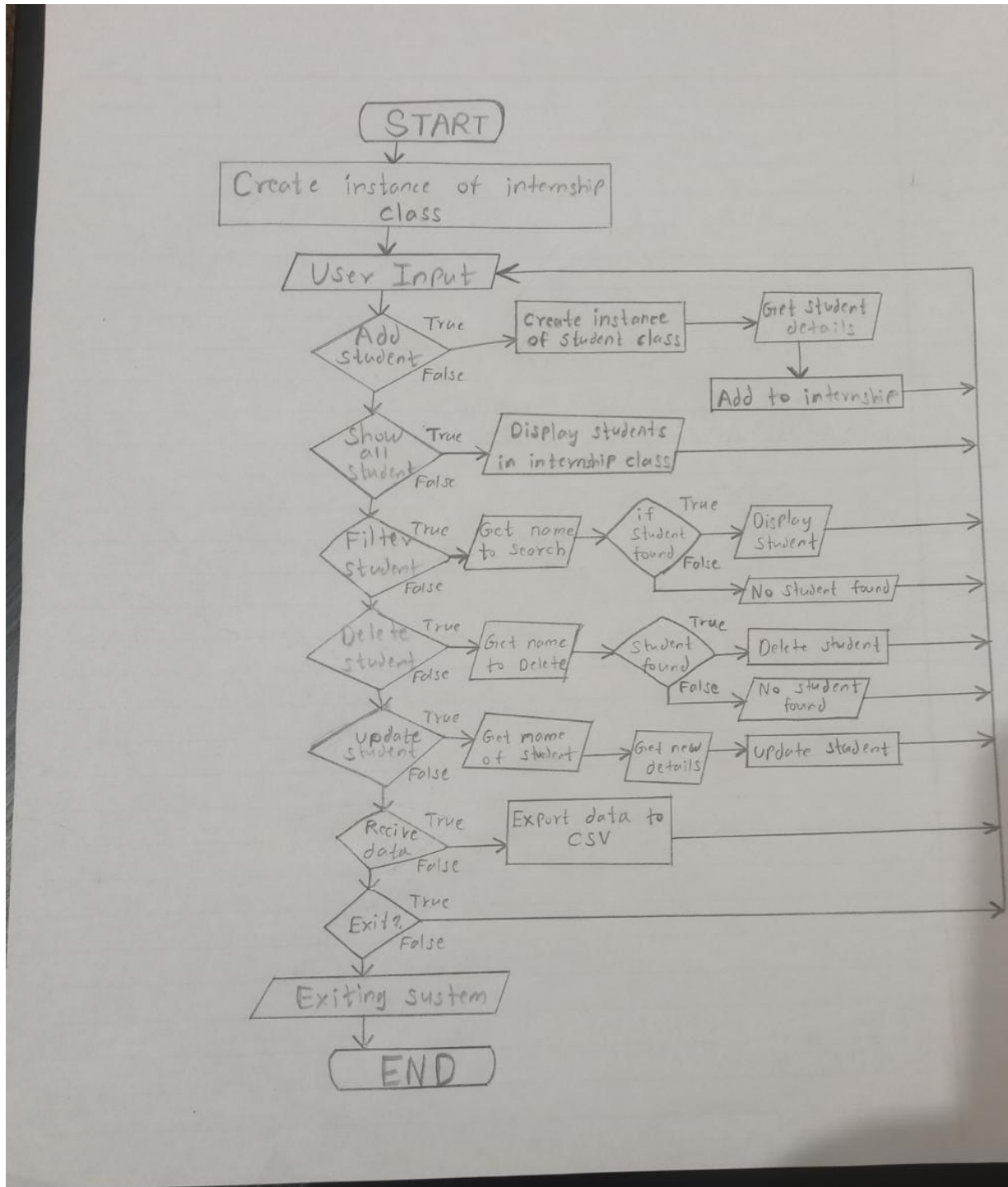
Fig. 4.1

2.5.1 The Code/Program:

```python
import csv

class Student:
    def __init__(self):
        self.name = ""
        self.email = ""
        self.phone = ""
        self.CGPA = ""
        self.department = ""
        self.age = ""
        self.gender = ""

    def get_details(self):
        self.name = input("Enter your name: ")
        self.age = input("Enter your age: ")
        self.gender = input("Enter your gender: ")
        self.email = input("Enter your email: ")
        self.phone = input("Enter your phone number: ")
        self.CGPA = input("Enter your CGPA: ")
        self.department = input("Enter your department: ")

    def display_details(self):
        print(f"Name: {self.name}")
        print(f"Age: {self.age}")
        print(f"Gender: {self.gender}")
        print(f"Email: {self.email}")
        print(f"Phone: {self.phone}")
        print(f"CGPA: {self.CGPA}")
        print(f"Department: {self.department}")
        print()
```

```python
class Internship:
    def __init__(self):
        self.students = []

    def add_student(self):
        student = Student()
        student.get_details()
        self.students.append(student)

    def show_all_students(self):
        if not self.students:
            print("No students added yet.")
            return

        for student in self.students:
            student.display_details()

    def filter_student(self, name):
        for student in self.students:
            if student.name.lower() == name.lower():
                student.display_details()
                return
        print("Student not found.")
```

```python
    def delete_student(self, name):
        for student in self.students:
            if student.name.lower() == name.lower():
                self.students.remove(student)
                print(f"{name} has been deleted.")
                return
        print("Student not found.")


    def update_student(self, name):
        for student in self.students:
            if student.name.lower() == name.lower():
                student.get_details()
                print(f"{name} has been updated.")
                return
        print("Student not found.")


    def receive_data(self):
        if not self.students:
            print("No students added yet.")
            return


        with open("students.csv", mode="w", newline="") as file:
            writer = csv.writer(file)
            writer.writerow(["Name", "Age", "Gender", "Email", "Phone", "CGPA", "Department"])
            for student in self.students:
                writer.writerow([student.name, student.age, student.gender, student.email, student.phone, student.CGPA, student.department])


internship = Internship()
```

```python
while True:
    print("1. Add student")
    print("2. Show all students")
    print("3. Filter student")
    print("4. Delete student")
    print("5. Update student details")
    print("6. Receive data to CSV file")
    print("7. Exit")
    print()
    choice = input("Enter your choice (1-7): ")

    if choice == "1":
        internship.add_student()
    elif choice == "2":
        internship.show_all_students()
    elif choice == "3":
        name = input("Enter the name of the student to filter: ")
        internship.filter_student(name)
    elif choice == "4":
        name = input("Enter the name of the student to delete: ")
        internship.delete_student(name)
    elif choice == "5":
        name = input("Enter the name of the student to update: ")
        internship.update_student(name)
    elif choice == "6":
        internship.receive_data()
    elif choice == "7":
        break
```

Fig. 5.1

2.6 Testing and Validation
The testing and validation phase involved the evaluation of the SIPMS system to ensure that it met the system requirements. Testing included functional testing, performance testing, and user acceptance testing. Validation involved the comparison of the system output with the expected output to ensure that the system was working correctly.

```
Enter your choice (1-7): 1
Enter your name: Shivani Chaurasia
Enter your age: 23
Enter your gender: Female
Enter your email: shivanichaurasia@gmail.com
Enter your phone number: 9912783465
Enter your CGPA: 9.8
Enter your department: Data Science
```

```
Enter your choice (1-7): 2
Name: Shivani Chaurasia
Age: 23
Gender: Female
Email: shivanichaurasia@gmail.com
Phone: 9912783465
CGPA: 9.8
Department: Data Science
```

Fig. 6.1	Fig. 6.2
Choice 1 Output Filling student details	Choice 2 output Showing all saved student details

```
Enter your choice (1-7): 4
Enter the name of the student to delete: Shivani Chaurasia
Shivani Chaurasia has been deleted.
1. Add student
2. Show all students
3. Filter student
4. Delete student
5. Update student details
6. Receive data to CSV file
7. Exit
```

```
Enter your choice (1-7): 5
Enter the name of the student to update: Shivani Chaurasia
Enter your name: Shivani Chaurasia
Enter your age: 23
Enter your gender: Female
Enter your email: Chaurasiashivani@gmail.com
Enter your phone number: 9081457689
Enter your CGPA: 8.6
Enter your department: Data Science
Shivani Chaurasia has been updated.
```

Fig. 6.3	Fig. 6.4
Choice 4 output Deleting specific student details	Choice 5 output Updating specific student details

```Enter your choice (1-7): 6```
 ```1. Add student```
 ```2. Show all students```
 ```3. Filter student```
 ```4. Delete student```
 ```5. Update student details```
 ```6. Receive data to CSV file```
 ```7. Exit```
	```Enter your choice (1-7): 7```
	
	 ```Process finished with exit code 0```

Fig. 6.5	Fig. 6.6
Choice 6 output Storing/Saving all student data to CSV file	Choice 7 output Exiting/Finishing the process

2.7 Deployment

The deployment phase involved the installation and configuration of the SIPMS system in the production environment. This included the setup of the web server, database server, and other system dependencies. The deployment phase also included the migration of data from the old system to the new system and the setup of user accounts and access levels.

2.8 Maintenance and Support

The maintenance and support phase involved the ongoing maintenance and support of the SIPMS system. This included the implementation of system updates and patches, as well as the resolution of any issues or bugs that arose during system operation. Maintenance and support also included the provision of user training and support to ensure that the system was being used effectively and efficiently.

3. RESULTS AND DISCUSSION

3.1 Results:

The Student Internship Placement Management System (SIPMS) was successfully developed and implemented using Python and the Django web framework. The system provides a secure and efficient platform for students to upload and manage their personal and educational information, and enables fast and easy access to placement procedures and related activities while maintaining the confidentiality of student data.

One of the key features of SIPMS is its one-time registration enabled system, which helps to reduce repetitive tasks and streamline the entire placement process. SIPMS facilitates full IT deployment of colleges and allows for the automated insertion of data into a database. It also checks all eligibility parameters before accepting candidates, making the placement process more efficient.

Overall, SIPMS provides a comprehensive solution to the challenges faced by the training and placement department of our college and can be accessed by authorized personnel throughout the organization.

3.2 Discussion:
The development of SIPMS using Python and Django can streamline the placement process, reduce errors, and improve accuracy. It can also enhance efficiency by automating eligibility checks and providing a secure platform for student data management. However, training and support may be needed for users unfamiliar with web-based systems, and technical issues can impact system efficiency. Overall, SIPMS has the potential to improve placement processes, but considerations should be made to address limitations and ensure system success.

3.3 System Analysis
The system analysis phase for SIPMS identified challenges such as manual data entry, lack of transparency, and fragmented processes in the existing placement system. SIPMS addressed these challenges by providing a secure platform for students to upload their information, automating placement procedures, and introducing a centralized system for streamlined and transparent processes. The system analysis phase played a crucial role in identifying these challenges and guiding the development of SIPMS to overcome them effectively.

3.4 System Design
The SIPMS system was designed to address challenges and limitations identified during the system analysis phase. Developed using Python and the Django web framework, it consists of components such as user management, student profile management, and placement process management. User management allows for different access levels, while student profile management enables students to upload and manage personal and educational information. The system also automates the placement process, including registration, eligibility checks, interview scheduling, and job offer placement, reducing time and effort for the department.

3.5 System Implementation
During the implementation phase, various modules were developed to perform specific tasks, such as student registration, uploading of resumes, tracking of placement progress, and communication with employers. These modules were integrated to form a cohesive system that provided a complete solution to the challenges faced by the training and placement department of our college.

To ensure the security and confidentiality of student data, various security measures were implemented in the system, including data encryption, password protection, and role-based access control. The system also had the capability to generate reports and analytics to provide insights into the placement process and student performance.

To test the system, various testing techniques were used, including unit testing, integration testing, and system testing. The system was tested for functionality, performance, and reliability to ensure that it met the requirements of the training and placement department and provided a user-friendly experience for students.

Overall, the system implementation phase was crucial in ensuring that the SIPMS system was developed according to the requirements and specifications of the training and placement department. The use of agile development methodologies, such as scrum and continuous integration, ensured that the system was developed efficiently and effectively, with frequent feedback and updates.

3.6 System Evaluation

Feedback gathered from students, staff members, and administrators who used the SIPMS system indicated significant improvements in the placement process. The automated and streamlined approach reduced the time and effort required by the training and placement department. The system's user-friendly interface and easy navigation were appreciated by users. Checking eligibility parameters before accepting candidates helped eliminate errors and inconsistencies. The system's data management capabilities ensured the secure storage and management of student data. Reporting features allowed for the generation of various reports, aiding analysis and evaluation of the placement process. Overall, the feedback indicated that the SIPMS system effectively addressed the needs of the training and placement department and improved the efficiency of the placement process.

4. CONCLUSION

The Student Internship Placement Management System (SIPMS) provides an efficient and secure platform for the training and placement department of our college. The system's features include user management, student profile management, and placement process management. The system was developed using the Python programming language and the Django web framework, and feedback from users indicated that it significantly improved the placement process. Overall, SIPMS provides a comprehensive solution to the challenges faced by the training and placement department of our college and can be accessed by authorized personnel throughout the organization. The system's automated and streamlined approach reduces the time and effort required by the training and placement department, and the one-time registration enabled system reduces repetitive tasks and streamlines the entire placement process. The system can be used as a template for other colleges and universities to improve their placement processes.

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